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IN THIS ISSUE:

Research on School Population
- The Problem of Estimating California's Population
- Public School Enrollment in California, 1947-56
- Living in a Growing State
- Urban Community Maturation and Schools
- Measuring Pupil Mobility

Cross-Validation Results for a Study Habits Inventory

Prediction of Achievement in Schools of Nursing

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THE EDITORS SAY:

More Than One a Minute!

A number of periods in American history have been identified by certain significant distinguishing characteristics. Currently, educators, sociologists and economists are particularly familiar with some of these descriptive labels. Such descriptions as "bedroom communities," "spiraling population," "mushroom growth," "waves of population," and similar colorful terms are all part of contemporary speech. These phrases rather aptly and strikingly point up the magnitude and immediacy of present population problems.

In California, the problem is particularly acute, not only because of the great increase in actual numbers, but also because of changes in the age composition of the population and the area and type of residency affected. It became apparent some ten years ago that California would be faced with some very pressing problems brought about by its rapidly changing population, and that the impact of such population change would be felt by all of the institutions and by all of the public facilities and services afforded by the State.

Recognizing the immediacy and urgency of the problem, the State of California employed a specialist in the area of population growth. Dr. Carl Frisen, a demographer of reputation and experience in the analysis of population change and the prediction of population growth, was added to the staff of the Department of Finance. He performs an invaluable service to the State in analyzing and predicting population patterns. These predictions have been of real value in forecasting the public services needed and in furnishing a design for institutional expansion. Dr. Frisen's article indicates an interesting and realistic approach to the phenomenon of population change. He describes techniques and modifications of techniques used in analyzing and predicting population patterns in California, a State which presents a dramatic portrait of population growth, mobility, and concentration in an area uniquely diverse in geography and economy.

The article by Peter Tashnovian presents a graphic picture of changes in school enrollment in the State over the last decade. A pattern of school population change, state-wide in character as well as sectional, is succinctly and dramatically presented by the graphic and tabular material included in this article.

Dr. Shellhammer contributes the third in this series of articles on population by indicating some of the implications of rapid population change for the public schools of California. This article presents briefly an analysis of the social impact and the economic significance of such change for the public schools. Attention is directed not only to the magnitude, but to the character of this change.

Dr. Kermoian of the San Francisco schools presents an interesting analysis of "Urban Maturation and School Plant Planning."

Dr. Clark, Director of Research, Burbank City Schools, concludes the group of articles with a discussion of the practical technique of measuring pupil in-and-out migration in a highly mobile area. This type of discussion should prove of particular value and profit to the many communities in California which find themselves (in varying degrees) in a comparable situation.

A stable, adequate and progressive community demands a political structure which, in addition to being economically sufficient and socially flexible, anticipates the size and changing character of its future population. More than managerial ability and adequate financial resources are required in this planning. Community leadership must have a thorough understanding of the phenomena of population change. A most valuable ingredient of this public consciousness and recognition is vision. Only through the development of, and reliance on such vision and forward planning, can social institutions be readied and geared to action before, rather than after, so-called "crises" have arisen because of unpredicted changes. For a population which is increasing at the rate of over one person per minute, a lag in structural accommodation is a penury which a state can ill afford.—H.W.M.

The Ninth Annual State Conference on Educational Research will be held at the Mar Monte Hotel in Santa Barbara on Friday and Saturday, November 15 and 16, 1957. The conference is sponsored by the State Advisory Council on Educational Research in cooperation with the California Teachers Association, the State Department of Education, county and district research departments, and schools and colleges of education of California. The theme of the conference will be "Research Planning and Design" and will be directed particularly to the problems of conducting research in local schools and school districts.

The Problem of Estimating California's Population: Present and Future

CARL M. FRISEN

In the Autumn of 1940, California's population reached the seven million mark. It had taken just twenty years for the State to double its size—the population was three and one-half million in the Spring of 1920. It is less than seventeen years from the Autumn of 1940 to early 1957; in that time the State's population has doubled again, reaching fourteen million. Today, we are adding over one-half million persons annually, with no hint of a change in the long-range pattern of rapid growth.

The types of population data prepared and published by the Department of Finance are an outgrowth of the needs for information on where we are—and where we are going. Current population estimates for the State, its counties and areas are developed annually. The age composition of California's population is analyzed in considerable detail. Since many activities of government must be geared to handle problems of rapid growth, population projections which are made for the State should show the total population and its distribution by age for the next ten years. An effort is made also to provide up-to-date projections of the State's public school enrollment by areas, and the expected enrollments at the State Colleges and the University of California over the next decade. The major needs of the State agencies, so far as population data are concerned, relate to the present and future numbers of people, their age composition and their geographic distribution. These materials are fundamental to a determination of the nature and extent of the services California must provide through its governmental facilities.

Population Estimates

The basic problem in estimating current population, whether for the State or its component areas, is to determine the change in population between the last decennial census and the present date. Numerous techniques have been developed, but their use depends upon the availability and accuracy of the "indicators" which they utilize in seeking to measure population change. This aspect has been summarized elsewhere as follows:

Dr. Carl Frisen came to the California State Department of Finance as Senior Research Technician in 1951. Previous to his acceptance of this assignment, he was Associate Professor of Sociology at Colorado College. He received his Ph.D. from Stanford University in 1951.

"The achievement of the ideal case in population estimating through the use of symptomatic data would involve utilizing a variable dependent on population numbers and independent of all other factors—one that changes only when population increases or decreases and changes in the same proportion. Actually, all variables in use at present are in some measure influenced by phenomena other than population change. Their usefulness is limited, first, by their availability, applicability, and accuracy of measurement and, second, by the degree to which techniques of application in making estimates take into account the effect of factors other than population change.

"The symptomatic data used in the estimating of population may be classified as *indirect*, those expressed in units other than persons, for example, data on utility outlets, rural route box-holders, building permits, and so forth; and *direct*, those expressed in terms of numbers of people. The latter includes two types of data. *Partial-direct* variables are limited to certain elements of the population, and their use involves assumptions regarding the relationship of the sub-group to the whole. They include election registers, natality statistics, and school data. *Total-direct* variables are complete in their coverage, relating directly to all segments of the population, and include morbidity and mortality data" (7).

Of the various types of indicators mentioned above, two are currently used in preparing estimates of the State's population: school enrollment and records of mortality. Both of these will be discussed briefly below.

How is school enrollment used as an estimating tool? Its utility derives from its ability to measure one of the components of population change, *i.e.*, net migration. As such, it plays a role in the following basic formula for preparing estimates:

"Civilian population of an area at the close of a period is equal to its population at the start of the period plus natural increase during the period, plus the net migration during the period, minus the net loss of population to the armed forces" (14).

In applying this formula, the State Department of Public Health furnishes data on births and deaths, providing the measure of natural increase, and the Department of Defense and the State Selective Service System make available information for estimating the loss to the military. There remains the need for measuring net migration: here school enrollment is utilized.

The task is one of relating school enrollment change to net migration. A variety of techniques have been devised: two described by the Census Bureal which they have designated Methods I and II (16); the method currently used by the California Taxpayers' Association in preparing annual county estimates (2); a method applied by the Department of Finance utilizing a grade-progression regression equation (no description of this method has been published); and others (10).

The estimates published by the Department of Finance, showing the total population of the State of California, are based on four separately derived estimates, including the application of the Census Bureau's Method II and the grade-progression method. Method II assumes that there is a definite relationship between migration of children of school ages and the migration of population of all ages. Then, using change in school enrollment as a basis for measuring migration of school children, an estimate is prepared showing the net number of persons of all ages who migrated into the State. In the case of Method II, "net migration is estimated from a comparison of the reported number of elementary school children on the estimate date, and the expected number of children of elementary school age surviving from the appropriate age group in the last decennial census" (13). Adjustments for underenumeration at the time of the census must be made and, in the case of California, a correction must be made for the change in minimum age of admission to the public schools which occurred shortly after the 1950 Census (3).

The grade-progression method measures population shifts through the change in enrollment from grades 2-7 one year to grades 3-8 on the same date one year later. This technique assumes that the year-to-year differences in enrollment, expressed in these terms, are due to migration as the major factor. There appears to be a valid basis for this assumption, and a regression equation has been calculated, using the relationship of grade-progression to net civilian migration into California for the period 1947-1950 (4).

The published State estimates also involve the use of two methods based on vital events. One of these has been designated the "vital rates" method, and makes the assumption that the trend of local birth and death rates is similar to the national trend during postcensal periods (1). Thus, knowing the relationship of California's crude birth and death rates in 1950 to those of the United States, assumptions may be made with regard to change after that time, and current estimates of population may be based upon assumed rates, using reported numbers of births and deaths.

The second technique based on vital events may be termed the "age-specific-death-rate" method. It utilizes mortality data only, and makes assumptions regarding the post-1950 changes in the age-specific death rates in California, basing the State's expected pattern on national trends (8).

It may be noted that the methods described briefly above, which are averaged to provide the published State population for California, represent two basic approaches to the problem of population estimating. The school enrollment methods use school data to measure migration, and utilize other information to estimate or measure natural increase and losses of civilians to the military. The methods using vital statistics, on the other hand, provide measures of the total population, and do not require separate analysis of the components of population change.

Population Projections

The widespread interest in California's population growth, particularly as it relates to the future, is reflected in the number of population projections which have appeared within the past two years. A report published by the Department of Finance in September, 1955 (5) includes State projections to 1966 by age as prepared by the Department of Finance, and provides a comparison with forecasts developed by the Bureau of the Census (15), Thompson (12), Weeks (17), and Stanbery (11). At about the same time, the Stanford Research Institute published a set of forecasts to 1975 for California and the Western States (9).

The projections published by the Department of Finance were derived through the setting of basic assumptions regarding: 1) net civilian migration, 2) changes in the crude birth and death rates, and 3) net losses to the military through enlistment and the draft. For the period 1956-1961, single-year-of-age projections were made to 65 years of age, using projected numbers of births, single-year-of-age survival rates, and net migration and loss to the military distributed by single-year-of-age. This procedure was utilized in order to provide a flexible set of age groupings, which might serve the various purposes of State agencies in evaluating their needs over the next five years.

Enrollment Projections

Nowhere is the effect of high birth rates and large scale migration more apparent than in the school enrollment pattern for California. At the present time, elementary enrollment is increasing at more than one and one-half times the population rate, high school enrollment shows a gain of about two and one-half times that for all ages, and college enrollment increases exceed three times the total rate. The shifts in growth rates as various age groups move through the grades necessitate a rather detailed picture of what lies ahead for the State. Currently, projections of enrollment at all levels are prepared using a grade-progression technique. The basic ratio expresses the relationship between enrollment in a given grade and that reported for the next higher grade one year later.

In 1947, the Bureau of Education Research, Department of Education, established the present procedure of tabulating elementary and secondary enrollments on October 31 and March 31. With these precise cross-sectional measures, it is feasible to evaluate the annual shifts in enrollment as they reflect the primary influence of migration (6).

Using the 1947-1956 span of recorded enrollments now available, it has been possible to examine grade-progression changes for the State and some 30 areas into which it has been divided for study purposes. Combining knowledge of enrollment patterns and population changes, these ratios have been projected into the future, resulting in forecasts of the number of

elementary and high school pupils. These projections, like those for the population of the State, assume that migration will continue to contribute the major component of future population gains.

From the projected numbers of pupils in the twelfth grade, it is possible to forecast the public school twelfth grade graduates expected in future school years. These serve as the basis for estimating increases in the number of college students at publicly-controlled institutions. The tendency of young people to continue their education, measured in terms of the ratio of college freshmen per 1,000 public high school graduates, becomes the means for moving students through college by grade-progression ratios similar to those used at the elementary and secondary levels. Here the effect of government assistance to veterans, the movement of students between areas and States, and other factors must be taken into account. The result is a more complicated technique than that needed at the lower grade levels.

In terms of results, practically complete data on births, general stability of administrative practices and compulsory attendance laws make forecasts of elementary enrollment relatively accurate for most larger areas. For some smaller units in rapidly growing areas, fluctuations in the volume of migration cause problems. When the procedure is extended through high school and college, increasing freedom of choice between school and work, availability of schooling, the necessity for military service and many other influences enter into the picture. As the projection technique is applied to the total for all colleges, then to each type of college, and finally to specific State Colleges and Campuses of the University of California, the number of relevant assumptions increases and so, too, does the likelihood that some of the important assumptions will prove incorrect.

In the final analysis, today's projections—of population, and of school and college enrollment—are likely to derive their major errors from our inability to foresee clearly:

1. the future trend of the birth rate;
2. year-to-year fluctuations in migration;
3. the ability and desire of the people of California to provide new facilities at all levels of education; and
4. the effect of our dynamic social, economic and technological patterns on the value of and need for a college education.

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An Analysis of Public School Enrollment in California For a Ten-Year Span, 1947-56

PETER J. TASHNOVIAN

Immediately following World War II, the postponed, accumulated demand for a thorough, comprehensive and current analysis of its public education hit the California State Department of Education with full impact necessitating a number of functional reorganizational changes, one affecting the Bureau of Education Research. Many requests for current data were being received from school districts, other states, and by private, state, and federal agencies. With the installation of IBM equipment in 1946, the Bureau initiated a long-term program of research studies. One of the first projects was that of collecting enrollment data on an actual instead of a cumulative basis.

Previous to this, there were available "state enrollment" or cumulative enrollment data. A cumulative record was kept by school districts which accounted for all pupils entering school, but failed to take cognizance of the loss of enrollment due to pupils leaving the school district or the State. It was also felt that a report of enrollment at a given date would not only furnish a more accurate picture of the actual number of pupils in the California schools, but would be of a more current nature since "state enrollment" figures were usually not available until almost six months after the schools closed for the summer.

It was decided to have enrollments reported semi-annually, October 31 and March 31 of each school year. These dates were selected because the school year was considered to be well under way by that time, and the enrollment more closely represented a figure characteristic of the school year. For comparative purposes, the October figures usually are used by various individuals. Usage through the ten years has proven them to be the more nearly representative of the entire year, and then, too, they are available six months earlier. The March data have come more and more

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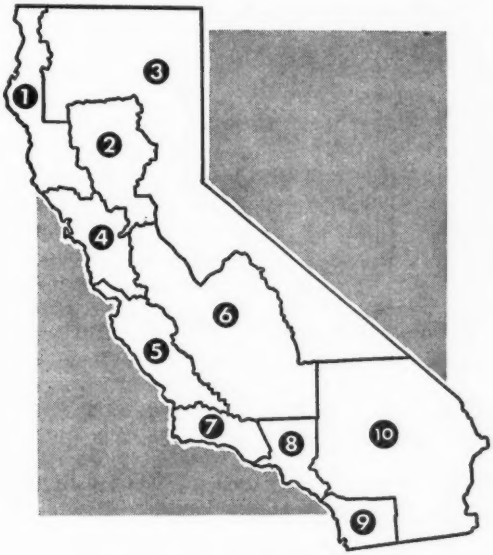
Peter J. Tashnovian has been Consultant in Education Research in the State Department of Education for the past eleven years. He received his Master's degree from Columbia University and also continued advanced graduate work at the University of Tuebingen and the University of Berlin.



California State Statistical Areas

FIGURE 1

Name	*Area No.*	*Counties Included*
North Coast	1	Del Norte, Humboldt, Lake, Mendocino
Sacramento Valley	2	Butte, Colusa, Glenn, Sacramento, Sutter, Tehama, Yolo, Yuba
Sierra	3	Alpine, Amador, Calaveras, El Dorado, Inyo, Lassen, Mariposa, Modoc, Mono, Nevada, Placer, Plumas, Shasta, Sierra, Siskiyou, Trinity, Tuolumne
San Francisco Bay	4	Alameda, Contra Costa, Marin, Napa, San Mateo, San Francisco, Santa Clara, Solano, Sonoma
South Central Coast	5	Monterey, San Benito, San Luis Obispo, Santa Cruz
San Joaquin Valley	6	Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare
South Coast	7	Santa Barbara, Ventura
Los Angeles Metropolitan	8	Los Angeles, Orange
San Diego	9	San Diego
Southeast	10	Imperial, Riverside, San Bernardino

to serve as a control or check of the October data, especially when studying drop-outs or the migration factor in the State. The following analysis is based on the October enrollment data.

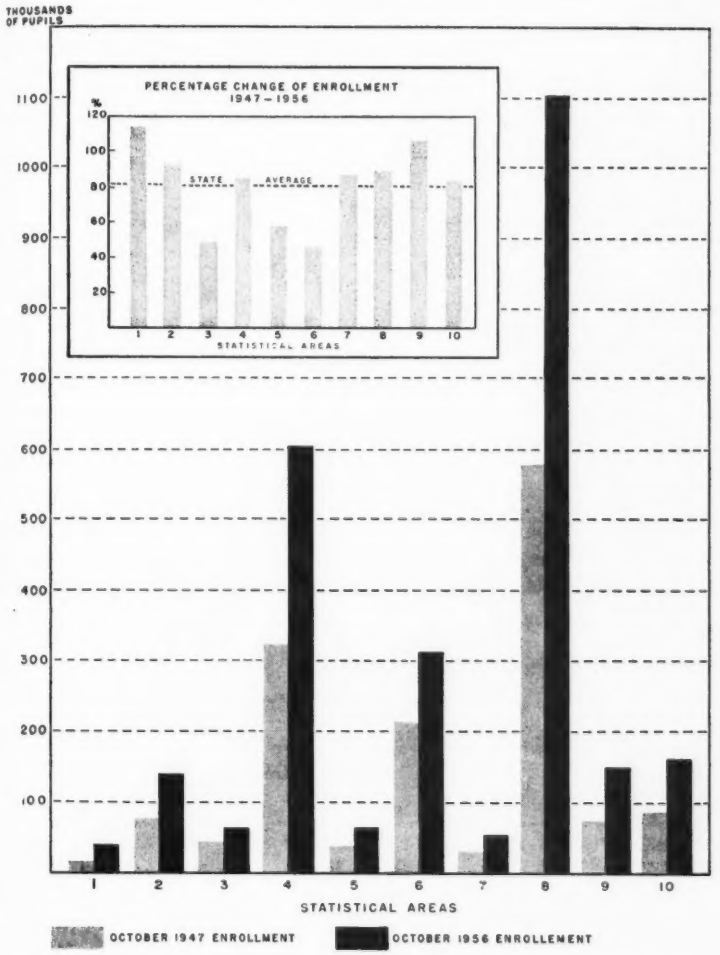
Enrollment vs. Total Population

Since the Fall of 1947 the total population of California has increased from approximately 9,600,000 to 13,600,000, or 41.7 per cent. During the same period the graded public school population has grown from 1,489,536 to 2,698,229, or 81.1 per cent, or at double the total population rate. In 1947 there was one pupil in school for every 5.5 individuals out of school; in 1957 this ratio is 1 to 4. By 1970 it is estimated this ratio will be 1 to 3. Where is this growth taking place? Is it consistant throughout the entire State, and is it taking place at the same rate?

Enrollment Growth Varies

If a student of school population trends desires to make a detailed analysis of growth in public school enrollment, a study of each school district, by level, would certainly be in order, since this gain has not been distributed evenly throughout the State. A couple of examples of striking growth patterns include districts such as San Lorenzo Elementary in Alameda County which had an enrollment of 2,173 in 1947 and 12,741 in 1956; or one showing an even greater percentage increase, Union Elementary in Santa Clara County with 144 in 1947 and 1,749 in 1956. On a county basis, the percentage change ranged all the way from a decrease of almost 10 per cent in Lassen County to an increase of over 200 per cent in both Orange and Del Norte Counties. Because of this uneven distribution of growth, and because of the large area of California, from little Alpine to populous Los Angeles, data regarding the variations in numbers and rates of change are presented according to the ten statistical areas as determined by the State Interdepartmental Research Coordinating Committee. These ten statistical areas shown in Figure 1 (page 155) describe the major geographic areas, coastal, valley and mountain, of California.

Public school enrollment almost doubled itself during this ten-year period, gaining an enrollment of 1,208,693 pupils, or an 81.1 per cent increase. As may be seen in Table I (page 158) the actual numeric increase was the largest in Area 8 and the lowest in Area 3. The rate of increase ranged from 113.4 per cent in Area 1 to 46.4 per cent in Area 6. A graphic presentation of these changes is made in Figure 2. No attempt will be made to treat the various levels, elementary, high school, or junior college separately, since an examination of the data showed a low or high rate of increase on all levels for the area when compared to its total rate. Compared with the 81.1 per



Enrollment in Grades K-14 in 1947 and 1956 by Ten Statistical Areas

FIGURE 2

cent rate shown for the total enrollment, the elementary level (grades K-8) had an increase of 87.4 per cent, high school (grades 9-12) 63.8 per cent, and the junior colleges (grades 13-14) 70.6 per cent.

TABLE I

Total Public School Enrollment for Grades K-14 for 1947-48 and 1956-57

Statistical Areas	*Enrollment*		*Increase*	
	1947-48	*1956-57*	*Number*	*Per Cent*
1	18,919	40,378	21,459	113.4
2	73,637	141,973	68,336	92.8
3	42,343	62,188	19,845	46.9
4	325,610	601,155	275,545	84.6
5	39,325	62,437	23,112	58.8
6	214,976	314,659	99,683	46.4
7	30,666	56,774	26,108	85.1
8	581,056	1,103,372	522,316	89.9
9	73,455	151,779	78,324	106.6
10	89,549	163,514	73,965	82.6
TOTAL	1,489,536	2,698,229	1,208,693	81.1

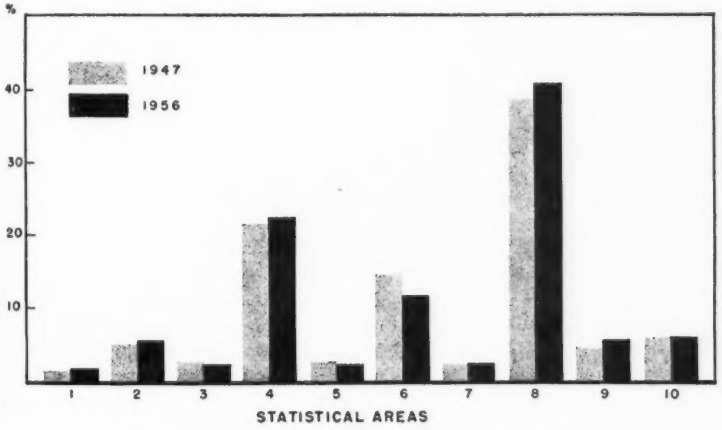
However, not only do the rates of change differ from one statistical area to another, but they may even vary from year to year within an area. If one examines Table II, it may be seen that Area 1 had several high rates

TABLE II

Per Cent of Increase in Enrollment

Years	*Statistical Areas*										*State*
Compared	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	
1947/48	11.2	6.7	7.8	5.9	2.7	4.2	8.0	5.0	1.7	5.0	5.2
1948/49	5.7	6.9	2.6	5.0	6.2	7.4	6.1	6.6	6.4	3.0	6.0
1949/50	12.3	5.2	4.7	5.7	4.5	1.1	5.0	4.1	7.7	2.0	4.3
1950/51	9.7	9.2	4.7	9.4	3.6	4.5	6.6	9.2	12.2	7.6	8.3
1951/52	8.4	7.3	1.4	7.2	6.2	4.3	6.6	7.6	9.5	8.3	7.0
1952/53	10.0	8.7	5.9	8.2	5.8	4.2	6.8	8.2	11.2	10.3	7.9
1953/54	9.2	8.3	4.1	7.7	5.4	5.0	9.0	8.3	8.8	7.1	7.5
1954/55	9.0	7.3	3.9	7.3	5.7	3.8	5.5	8.8	9.4	8.5	7.5
1955/56	3.9	8.6	4.5	7.0	7.5	4.6	10.2	8.8	9.0	10.9	7.8
1947/56	113.4	92.8	46.9	84.6	58.8	46.4	85.1	89.9	106.6	82.6	81.1
Average Rate of Increase	7.9	6.8	3.9	6.3	4.7	3.9	6.4	6.6	7.5	6.2	6.1

of 10 per cent or more, but this year has a low of 3.9 per cent. Also, one may note that Area 10 in the recent years has been having high rates of increases. On a state-wide basis, the rate of increase has been steady with a slight tendency toward an increase in rate. As another means for comparison, an average rate of increase was computed for the State and each statistical area.



Percentage Ratio of Statistical Area Enrollment to Total Enrollment in 1947 and 1956

FIGURE 3

As may be concluded by now, even though different areas may have given amounts of increases, they may still be steadily losing ground when compared to the rest of the State. Another way of showing this occurrence is seen in Figure 3, in which the school enrollment in each statistical area is compared with the total enrollment of the State for the years 1947 and 1956. Areas 3, 5 and 6 are losing ground, Areas 7 and 10 remaining even, and the remainder gaining with Area 8 showing an increase of 1.9 per cent.

Briefly, this is the public school enrollment picture as seen today and looking back over a period of ten years. What about the next ten years? According to projections by the California Department of Finance, our public school enrollment will be well into the four million mark. May the past predict the future.

Living in a Growing State

THOMAS A. SHELLHAMMER

In glancing back over the past 100 years one finds nothing distinctive about California's first 50 years of growth except a unique distribution of the people in mining centers, and an unusual sex and age composition that gave California a preponderate proportion of young single men. The quest for quick fortunes in gold fields rather than agricultural pursuits led to rapid settlement in non-agricultural communities. Urban populations grew faster than rural populations in those early days. From the turn of this century these earlier trends were reversed and California's growth has been a story without parallel in the population growth of this country. Caught in the centrifugal force of a great migration to this State and an internal migration from country to city and city to suburban, California's citizens must cope with a mass movement of people that is greater than anything in our previous history. The vast hordes that have poured into this State have given it a history of population growth that has at times reached a rate four times greater than that of the national growth average. A quick look at the past decade, 1947-1957, shows a growth of approximately four million in California's population and an increase of one million boys and girls in attendance in its public schools. Today California has over 8 per cent of the nation's residents and its approximate 14,200,000 people makes it our second largest State.

Where They Live

Although some of its critics predict that the days of the big city are numbered, the huge metropolitan center still shows a lot of staying power. California has 8 rather clearly defined metropolitan areas. They cover 15 counties. Approximately 9 out of every 10 new residents gained since 1950 live in one of these urbanized areas. Of every 100 persons added to California's population since 1950 it may be said that approximately:

47 are in the Los Angeles Metropolitan area;
20 are in the San Francisco Bay area;
11 are in the San Diego Metropolitan area;
6 are in the Southeastern part of the State;
5 are in the Sacramento Valley;
5 are in the San Joaquin Valley;
6 live elsewhere along the coast or in the mountain areas.

Dr. Thomas Shellhammer has been consultant in Education Research in the State Department of Education for the past nine years. Previous to this assignment he was associated with the Berkeley Public Schools. He received his Doctorate from Stanford University in 1955.

Californians do not take to skyscraper living. Here housing, business, and industrial expansions take on a horizontal rather than vertical direction. As such, the huge mushrooming suburban areas become the living pattern. People tend to live in one community and work in another. Descriptions such as "bedroom communities" are used to describe this type of living. The State's future growth will undoubtedly mean a further concentration of people in California's metropolitan areas. The major population growth probably will continue to occur in the areas around the cities rather than in central cities themselves.

Moving is not restricted just to migrating to California and settling after a single move. Metropolitan areas witness much moving by people within their boundries. People always seem to be on the move in many of these metropolitan areas. In some communities almost everyone is there from somewhere else. The tightly knit permanent community with aged and traditional mores are the exception.

Where They Work

The tremendous expansion of industries in California during and following World War II is forming a cultural pattern that is increasingly urban and industrialized. Even the agricultural economy of the Great Central Valley accentuates this picture. Much of this area's agriculture is nourished through irrigation development. In many instances the farming is done by large corporate ownership. As a result much of California's rural life is more industrialized than in many other sections of the nation. Agricultural workers tend to live in towns rather than on the land they farm. In a sense, they are town dwellers. The term "factories in the fields" is used sometimes to describe agricultural pursuits in California.

About 40 per cent of California's 14,200,000 residents are employed. The per cent of these employed persons in 1950 in each of the major occupational groups, as classified by the United State Bureau of Census are shown in Table I.

Since a low per cent of California's workers find employment in agricultural regions, urban and industrial areas continue to be the focal points of attraction for new residents. Their rate of growth in California has been about one and one-half times as fast as the average growth for metropolitan areas throughout the nation.

Population Problems

California like many of its sister states is undergoing changes in attitudes about population in addition to concerns about increased numbers. Awareness of population problems seems to heighten with changes in social philosophy as well as marked shifts in numbers. For example, in our agricultural economy of former days the family was chiefly responsible for caring for its aged and ill members. There was little interest in the

age composition of the population. With the advent of social security and retirement benefits there emerged a new concern about the proportion of older people and problems identified with old age.

TABLE I

Per cent of Californians Employed in Major Occupational Groups, 1950

Group	*Percent Employed*
Craftsmen, foremen, and kindred workers	15.3
Operatives and kndred workers	15.2
Clerical and kindred workers	13.6
Managers, officials, and proprietors excluding farm	12.1
Professional, technical, and kindred workers	11.2
Service workers, except private household	9.3
Sales workers	8.5
Laborers, except farm and mine	5.1
Farm laborers and foremen	3.3
Farmers and farm managers	3.0
Private household workers	2.2
Occupation not reported	1.2

During the past 16 years there has been a rapid increase in birth rates. This is especially true in middle and upper socio-economic classes. From recent increased birth rates and life spans has emerged a bi-modal population distribution. In the middle of these two population peaks we have coming into employment age one of the smallest number of people in relation to the total population in all our history. The low birth rates during the depression of the 1930's simply do not provide enough young employable people to meet the present labor demands. This means competition for youth. Because of the small baby crops during the 1930's we have shortages in recuritable manpower—be it for professions, trades, crafts, and armed forces throughout the 1950's. Even the heavy migration to California cannot fill all the demands for young recruits into employment fields such as science, engineering and teaching. At present the colleges and universities in California are unable to train enough people for these occupations. They fail, not because young people are uninterested or counseled into other fields, but due to the uneven age composition of our population. In short, there are not enough young people.

The growing interdependence of present day living makes it difficult to solve social and economic problems at the community level outside of a state, national and international frame of reference. Nevertheless, the community is usually the person's first point of interaction beyond his

family. War and post war industrial booms in California have disrupted social organizations in old communities and created brand new communities. The centrifugal forces of mass movements of people have been so disruptive that both old and new communities must design new social patterns and organizations. The extent of social disorganization in such communities may involve every aspect of life and all age groups. In many communities a way of life that seemed stable prior to the pre-boom days was suddenly disrupted by a multitude of factors of social change. Some were subtle, others not. Examples of only a few of these sudden changes can be given here. Higher wages in industrial work soon siphoned off the supply of domestic and field workers. Increasing numbers of high school youngsters left their classrooms to enter employment fields. Housing shortages developed. Housing tracts sprang up everywhere. Newcomers unaccustomed to the community mores were hard to assimilate. In some instances bitter conflicts developed between the old and new timers. New and dubious forms of recreation appeared. Vice and lawlessness combined to baffle the existing law enforcement machinery. New responsibilities were thrown upon social agencies within the community. The church, school, and social agencies for the maintenance of health, safety, and welfare, became swamped by problems so gigantic to their normal sphere of operation that they were left bewildered and uncertain in charting future courses. The post World War II days did not always bring back the "good old days." Many of the old and stable communities continued their struggles with problems similar to those brought by the wartime boom. People returning from the armed forces and war employment had different experiences than those who remained behind. In many of these communities new patterns of community living had to be developed.

The brand new communities that mushroom up in suburban areas throughout California also experience many "growing pains". In some of these communities almost everyone is a new resident. Each person brings his own value system and perception of community life from previous living experiences. There is no reservoir of common community past experiences from which to draw guide lines for the future. Many of these communities flounder in their first attempts to establish the social institutions necessary to carry on effective democratic group living. Sometimes the public school becomes a temporary victim of the intensity of the struggle.

Population and Schools

Schools more quickly than most social institutions are affected by changes in population trends and patterns. Sudden or major shifts in school population call for adjustments in school housing and teacher personnel. Migration, occupational demands, and changes in the proportion of young people of various ages may all indicate the need for changes in the school's

curriculum. Our population is more mobile than ever before in our history. Large numbers of children of migratory families wander up and down the great central valley of California. Children in some of these families attend eight schools in one year. In some communities children are attending school with groups of other children who are new and strange to them. Many adults feeling the insecurity of being newcomers are in fear of the old timers and direct a wide range of criticism at the educational programs in their community. In some communities a large proportion of the population is composed of elderly people who have no children attending school. Sometimes they do not see the need of supporting schools in their communities. The level of education of the adult population of the community also can be a major influence in determining the amount and kind of education that public schools provide for children. These and similar cultural factors require continual adaptations in school programs to meet local and State needs.

It is said that a problem of modern democracy is that the frontier has been replaced by the large urban center. This places added responsibility upon school people to demonstrate that in the life of the school and in its relation with the community, democracy does and can work within a highly populated society. This is difficult to do unless each community continually appraises its population facts. For example, is its own population growing rapidly or is it static? Is the birth rate high, low, or average? What is the age composition of the population in the community served by a particular school district? Is the school district meeting the educational needs of all the community residents? How much change-over is there in the population? What proportion of new residents are new to California? Where do the newcomers come from? How much drop-out from school is there among our students? Where do these people go? What does the future hold for employment possibilities for all our youth? What do shifts in population mean to the financial support of schools.

In almost every community there is usually some focus of social organization. For centuries this focus was usually found in the medieval castle or church. With the development of the industrial revolution came a rapid expansion of our public school system. As time passed the school increasingly became an important community coordinating agency. Today the public school is one of our most cherished social institutions. It has an excellent record of achievement, and holds tremendous potential for good. This potential requires a school program that is clearly relevant to the whole range of problems of growing children and social changes in their culture. School staffs and school boards cannot do this without a clear understanding of the population trends and changes as they affect the lives of the people whom the schools serve.

Urban Community Maturation And School Plant Planning

SAMUEL B. KERMOIAN

One of the serious situations faced by school planners in an urban area is in the change in school population occurring in the various neighborhoods or communities within a city. The complexity of this situation is apparent when one recognizes that this variability in rates of change in school population can be in the direction of growth or of decline. The school population can be increasing in an outlying community, slowly decreasing in an adjoining community, and rapidly decreasing in a central community all at the same time.

School planners have long suspected a connection between community maturation and changes in school enrollments. However, no attempts were made to clarify this association. Their traditional methods of predicting population trends have proven inadequate, speculative, and hazardous as a basis for ascertaining school plant needs. These become subject to probable errors which increase as the projection extends beyond the first year, involve numbers of children yet unborn, and lack consideration of an important factor—that of the direction and comparative rates of maturation of individual communities.

The writer attempted to determine the relationship of community maturation to school-age population and to indicate the significance of different patterns of community maturation for school plant planning.

Procedure Used

San Francisco, California, was chosen for study. Various ecological factors as components of variables which affect a community's internal spatial pattern were selected from census tract reports of 1940 and 1950. These were:

I. Age of Population
   A. School-age population (5-14 years)
   B. Aged population (65 years or older)

Dr. Samuel B. Kermoian is an elementary school principal in the San Francisco Schools. He formerly served as teacher and assistant principal. He has, for the past several years, spent his summers working in the Stanford School Plant Planning Laboratory. His article is based on his doctoral dissertation completed at Stanford University.

II. Housing Characteristics
  A. Age of dwellings
    1. Dwellings ten years old or less in 1949
    2. Dwellings eleven to twenty years old in 1949
    3. Dwellings twenty-one to thirty years old in 1949
    4. Dwellings over thirty years old in 1949
  B. Type of dwelling
    1. Dwellings containing one or two units
    2. Dwellings containing three or more units
  C. Occupancy of dwelling
    1. Owner-occupied
    2. Renter-occupied

III. Ethnic Composition
  A. Native born white
  B. Foreign born white
  C. Non-white

IV. Mobility
  A. Stability rate
  B. Intramobility rate
  C. Intermobility rate

V. Median Income

The over-all growth of San Francisco was traced and its thirteen communities studied individually with particular reference to the above factors. School enrollments were plotted from 1917 through 1956.

Using Spearman's *rho* formula for determining the relationship between differences in rank order of two series of measures, school-age population was correlated with the remaining ecological factors. Next, age of dwellings was selected as a criterion of community maturation and each community was ranked in relation to the proportions of dwellings aged: (1) zero to ten years, (2) eleven to twenty years, (3) twenty-one to thirty years, (4) over thirty years. These four rankings were then individually correlated with the remaining ecological factors. A significance level of .05 (rho=.553) was adopted.

Results Obtained

Interpretation of enrollment plots revealed that school enrollments rise and fall in cycles. Significant were those of two communities which differed as to type of dwellings but which developed within the period of available data and early enough for study. Although one community contained residences of one and two units and the other was typified by large numbers of apartment houses, their enrollment cycles were markedly similar. In the case of these two communities, it was possible to generalize enroll-

ment periods from the cycles which developed. Variables which affect enrollment cycles were discovered and their effects noted.

The correlation of school-age population with the remaining ecological factors selected is summarized in Table I.

TABLE I

Relationship of School-Age Population to Selected Ecological Factors Ranked in Order of Proportions Existing Within San Francisco's Thirteen Communities

Factors	*Rho*	
	1940	*1950*
Aged Population	—.90*	—.69*
Housing Characteristics		
Dwellings ten years old or less	. . . . .	.93*
Dwellings eleven to twenty years old	. . . . .	.42
Dwellings twenty-one to thirty years old	. . . . .	—.07
Dwellings over thirty years old	. . . . .	—.29
Dwellings containing one or two units	.87*	.85*
Dwellings containing three or more units	—.82*	—.58*
Dwellings owner-occupied	.83*	.85*
Dwellings renter-occupied	—.62*	—.76*
Ethnic Composition		
Native born white	.30	.51
Foreign born white	.20	.20
Non-white	—.85*	.46
Mobility of Population		
Stability rate	. . . . .	.26
Intramobility rate	. . . . .	.16
Intermobility rate	. . . . .	.85*
Median Income	. . . . .	.52

*Significant at the .05 level.

Significant direct relationships were found to exist between school-age population and: (1) dwellings less than eleven years of age, (2) one and two unit dwellings, (3) dwellings owner-occupied, (4) intermobility rate. Indirect relationships were indicated in relation to: (1) aged population, (2) dwellings containing three or more units, (3) dwellings renter-occupied, (4) non-whites (1940 only).

The correlation of age of dwellings with the remaining ecological factors is shown in Table II.

TABLE II

Relationship of Age of Dwellings to Selected Ecological Factors Ranked in Order of Proportions Existing Within San Francisco's Thirteen Communities

Factors	*Rho* — *Period of Construction and Age of Dwellings*			
	1940-1949 (0-10 yrs.)	*1930-1939 (11-20 yrs.)*	*1920-1929 (21-30 yrs.)*	*Pre-1920 (over 30)*
Age of Population				
School-age population	.93*	.42	—.07	—.29
Aged population	—.83*	—.73*	—.21	.73*
Housing Characteristics				
Dwellings containing one or two units	.92*	.67*	.36	—.80*
Dwellings containing three or more units	—.84*	—.59*	—.36	.80*
Dwellings owner-occupied	.93*	.73*	.40	—.84*
Dwellings renter occupied	—.89*	—.63*	—.28	.76*
Ethnic Composition				
Native born white	.58*	.69*	.22	—.53
Foreign born white	—.39	—.65*	—.21	.64*
Non-white	—.48	—.43	—.24	.37
Mobility of Population				
Stability rate	.30	.54	.47	—.46
Intramobility rate	.11	—.35	—.31	.25
Intermobility rate	—.53	—.36	—.18	.33
Median Income	.73*	.84*	.70*	—.87*

*Significant at the .05 level.

Significant positive correlations appeared between dwellings under eleven years of age and: (1) school-age population, (2) one and two unit dwellings, (3) owner-occupied dwellings, (4) native born whites, (4) income. Correlations were significantly negative in relation to: (1) aged population, (2) three or more unit dwellings, (3) renter-occupied dwellings.

Dwellings aged eleven to twenty years showed similar relationships except that the relationship to school-age population was no longer significant and that to foreign born white signficantly negative.

Except for median income, no significant positive or negative relationships appeared between the selected ecological factors and dwellings aged twenty-one to thirty years.

Those dwellings thirty or more years of age showed a significant positive relationship to: (1) aged population, (2) renter-occupied dwellings, (3) foreign born whites. Significant negative correlations occured between dwellings in this age period and: (1) dwellings containing one or two units, (2) owner-occupied dwellings, (3) income.

Stages in community maturation were generalized from the results of the correlations. These were discovered to bear a potential relationship to the enrollment cycle.

Conclusions

A relationship does exist between community maturation and school-age population. Communities containing large proportions of new (10 years old or younger), one or two unit, owner-occupied dwellings also contain, on the whole, large proportions of school-age children. A small proportion of aged is found in these communities.

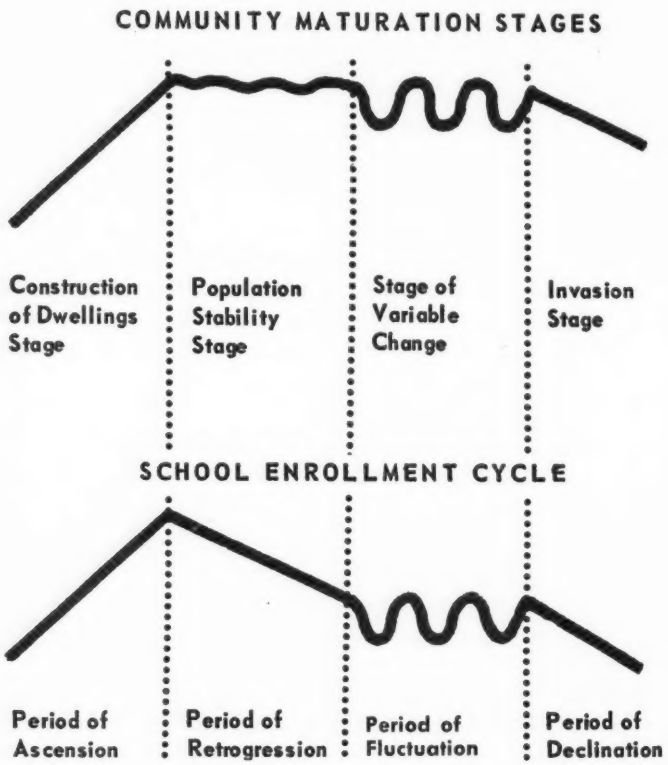
Communities mature in stages, each bearing a potential relationship to period in an enrollment cycle, as shown in Figure 1 (page 170).

The first stage begins with the initial construction of new dwellings. This is the *Construction of Dwellings Stage.* The dwellings generally contain one or two units and are owner-occupied. Occupants, primarily, are white and enjoy higher than average incomes. In relation to school-age population, this initial occupation of a community is the *Period of Ascension* during which the school enrollment cycle begins its upward trend.

The *Stage of Population Stability* follows. During the second stage, the population is comparatively stable. The median income is higher than it was in the previous stage, probably because a greater earning power is enjoyed by the now older occupants. In terms of school enrollment, this is a *Period of Retrogression* and is typified by a decline in the enrollment cycle—conceivably due to the fact that the children are leaving elementary school for secondary school.

The third stage is one of change. It is distinguished as the *Stage of Variable Change.* A general unrest appears. The median income is still high during this stage. The grown children are moving out of their parents' homes. It appears as a *Period of Fluctuation* in the school enrollment cycle. The decreasing enrollments level-off and fluctuate during this period.

The last stage is the *Invasion Stage.* A large increase occurs in the proportion of aged in the community as parents advance into the grandparent age. The median income declines. Dwellings are converted into additional units for rental purposes. Absentee ownership of dwellings increases as does the proportion of renter-occupation. The *Period of Declination* is the parallel period in the enrollment cycle.



Schematic Representation of the Potential Relationship Existing Between Initial Stages in Community Maturation and the School Enrollment Cycle

FIGURE 1

Subsequent enrollment cycles do not repeat themselves in a set pattern. They rise and fall in response to many interrelated variables which act upon the community including: (1) changes in birth rates, (2) type and composition of the invasion groups, (3) time and amount of new construction, (4) changes in size and age aggregate of the population, (5) economic conditions, (6) redevelopment.

To meet the changing demands brought about by community maturation, there should be a continous re-evaluation of school plant needs. A thorough study of enrollment and maturation trends on a community basis should be an important part of any investigation of school plant needs.

The changing nature of enrollment cycles indicates a need for some portable or demountable classrooms to provide the ncessary flexibility needed to handle temporary enrollment swells. School sites should be large enough to handle future as well as present building requirements.

Since schools in urban areas are, on the whole, used for a long time, a comprehensive policy of plant maintenance, rehabilitation, abandonment, and replacement is necessary.

For those interested in comparative education, the December, 1956, issue of *Education and Psychology*, published in Delhi, India, contains some excellent articles. In fact, the issue is devoted to guidance as it is reported in secondary school practice in the Soviet Union, Great Britain, the United States, and India. The articles appear to be straight forward, competent reporting, with no attempt to "sell" the local program.

The Russian article gives a good insight in the polythechnic school, and it sounds not too different from programs in the U. S. schools of this character, except for the frank admission that the program will speed up the transition from socialism to communism. The article says very little about guidance procedures aimed at self-evaluation and self-realization of the individual pupil.

The British article, on the other hand, is full of concern over the development and adjustment of the individual learner toward a vocation. The role of the Youth Employment Service is prominently displayed, along with brief references to the "drop out" problem in British secondary schools.

The U. S. article, by Henry Angelino, University of Oklahoma, offers a good historical review of our own vocational guidance development. It also contains a summary analysis of some of the principal, unresolved problems in the field.

The Indian material is especially interesting for its pulling aside the curtain a little for us Westerners. The Indian schools are quite aware of the significance of guidance and are making wide use of English- speaking materials and experience. Some of the problems discussed have a very familiar sound, and they can give us quiet comfort in the general knowledge that people and schools are very much the same wherever they are found closely bound together.

—*Education and Psychology* (A Research Quarterly), Hauz Kazi, Delhi, India. Single issues $1.00, $3.00 annually.

Measuring Pupil Mobility

EDWIN C. CLARK

Population is increasing. School enrollments are larger. Statements such as these are an old story in California. While this State's population has grown steadily since the turn of the century, the greatest growth has been in the past fifteen years.

This increase in California's population has arisen from two sources—natural increase, and the migration of people to the West. A high birthrate, plus an extension of life expectancy, has resulted in the natural increase. Increasing concentration of industry connected with the activities of World War II, and a favorable climate, have brought about one of the great migrations of population to the western United States, and California, in particular. California's State Department of Finance estimates a continued growth of about 400,000 for at least another two years; one half from natural increase, and the other half from migration.

Schools are operated for the education of people. Primarily, these people are the young—the children. Educational workers, however, do not look upon the children they are helping to educate as so much raw material for the machines of education. They are concerned with individuals. Teachers seek to learn more and more of the characteristics of individuals and the social environment surrounding them, to the end that the educational process may be adapted toward providing the highest possible development of each person.

Sociologists have time after time pointed to the effects upon people—both children and adults—of the movement of the established home. There is created by this mobility a new need to "put down roots," to learn new ways, to adapt to new ways of life. With these problems the school must concern itself, if it is to proceed most efficiently in the process of education and the development of worthy citizens.

It was with these responsibilities in mind that the Burbank Unified School District set about to review the existing situation within its district. The methodology reported here does not provide a solution, but only a beginning toward the determination of a few facts concerning the extent of the migration.

A first step involved the obtaining of information from children themselves. A questionaire for completion by children, under specified direction

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Dr. Edwin C. Clark has been Director of Research for the Burbank Unified School District for the past eight years. Before accepting this position he was superintendent of schools in Juneau, Alaska. He received his Ed.D. from Stanford University in 1954.

by their teachers, was prepared. This questionaire resulted in usable responses from 97.9 per cent of the 9,993 students in grades two through twelve. It inquired as to the number of years a pupil had been enrolled in the Burbank schools and the location of prior school attendance. Table I summarizes the results of this survey.

TABLE I

Number and Percentage of Pupils at Each Level Who Had Attended Schools Other Than Burbank

Grade	*Number*	*Percentage of Total Enrollment at Each Level*
Elementary (2-6)	1,788	33.2
Junior High (7-9)	1,503	62.4
Senior High (10-12)	1,469	75.7

The 1,788 elementary, 1,503 junior high, and 1,469 senior high school students were then divided upon the basis of the length of time they had been enrolled in the Burbank schools. The results are given in Table II.

TABLE II

Length of Time Transfer Students Have Been in Burbank Schools

Classification	*Elementary 2 to 6 Incl.*		*Junior High 7 8 9*		*Senior High 10 11 12*	
Length of time in Burbank Schools	*No.*	*Per Cent**	*No.*	*Per Cent**	*No.*	*Per Cent**
One Year	681	12.6	232	9.6	128	6.6
Two Years	501	9.3	220	9.1	178	9.2
Three Years	313	5.8	206	8.5	148	7.6
Four Years	194	3.6	227	9.4	143	7.4
Five Years	99	1.8	232	9.6	152	7.8
Six Years			235	9.7	165	8.5
Seven Years			111	4.6	135	7.0
Eight Years			40	1.6	147	7.6
Nine Years					158	8.1
Ten Years					78	4.0
Eleven Years					37	1.9
Total pupils received in Burbank Schools by transfer	1,788	33.1	1,503	62.1	1,469	75.7

*Per Cent of total enrollment in this level of Burbank schools.

These same transfer students were next classified as to the location of the school which they attended immediately prior to entering the Burbank schools. The first breakdown, on the basis of California or non-California residence, is shown in Table III.

TABLE III

Location of Last School Attended by Pupils Moving to Burbank

Classification	*Elementary (2 to 6 Incl.)*		*Junior High (7, 8, 9)*		*Senior High (10, 11, 12)*	
	No.	*Per Cent**	*No.*	*Per Cent**	*No.*	*Per Cent**
Transfers from other California Cities	1,295	72.4	990	65.9	966	65.8
Transfers from outside of California .	493	27.6	513	34.1	503	34.2

*Per Cent of total enrollment in this level of Burbank schools.

As would be expected, Table IV shows that by far the largest number of pupils enrolling in Burbank schools from other California schools come from nearby Los Angeles and Glendale.

TABLE IV

Point of Origin of California Pupils Transferring to Burbank

Classification	*Elementary (2 to 6 Incl.)*	*Junior High (7, 8, 9)*	*Senior High (10, 11, 12)*
Total number from California schools	1,295	990	966
From Los Angeles	742	392	491
From Glendale	177	135	123
From Burbank Parochial	79	41	51
From Pasadena	17		
From Other California Cities	280 from 108	422 from 73	301 from 80

Table V (on page 176) reveals that students transferring to Burbank came from 47 of the 48 states; only Vermont was not represented. Students also came from Hawaii, the Canal Zone, and eleven countries.

Monthly Review of Migration

The foregoing information presented a status picture of the district. In order to keep the information up to date, a form was prepared by which each teacher or registrar reported the movement of children at the close of each school month. A summary of these reports is prepared monthly for district use. A facsimile of such a monthly report is presented in Figure I.

Analysis of these monthly reports, indicating trends and shifts in trends, are presented to the administrative and supervisory staff of the district.

Entering From ⟶		⟵ *Leave For*
101	Other States	43
11	North Hollywood	19
12	Sun Valley	11
23	Los Angeles Proper	21
8	Parochial Schools	4
11	Other Los Angeles County Towns	43
4	Van Nuys	6
8	Glendale	9
7	San Fernando	8
14	Calif. Cities outside Los Angeles County	28
5	Outside United States	5
4	Home Instruction	3
	Armed Forces	4
8	Late Enrollment	
2	Continuation	2
	Marriage	5
	Work	10
	Destination Unknown	13
218	TOTALS	234

Facsimile of Monthly Report on Pupil Migration, Second School Month

FIGURE I

Summer Migration

There are a considerable number of families who, when possible, delay the movement of their place of residence until the sumer vacation period. As a result, this period becomes one of greater than average movement.

In order to obtain a measure of the extent and direction of this movement, a study is made in September of class registers by comparing them with the registers for the lower grade at the end of the previous year. This,

TABLE V

Point of Origin of Non-California Pupils Transferring to Burbank

Source	*Elementary (2 to 6 Incl.)*		*Junior High (7, 8, 9)*		*Senior High (10, 11, 12)*	
	Number of Pupils	*State Rank*	*Number of Pupils*	*State Rank*	*Number of Pupils*	*State Rank*
Arizona					19	6
Florida	13	10				
Illinois	57	1	60	1	55	1
Indiana	16	6	15	9		
Iowa	16	6			18	9
Michigan	45	2	44	2	44	3
Minnesota					20	5
Missouri			19	7		
New York	44	3	42	4	46	2
Ohio	44	3	43	3	36	4
Oregon			19	7		
Pennsylvania	26	5	22	6	19	6
Texas	16	6	26	5	19	6
Washington	16	6				
Other *	200	--	223	--	227	--

*Includes 33 states besides those listed, also District of Columbia, Hawaii, Canal Zone, Puerto Rico, Canada, Mexico, Panama, Phillipines, England, Scotland, Northern Ireland, Germany, China, and South Africa.

like the monthy reports, helps to pinpoint the extent and the local areas of movement.

Such a study carried out in 1955 revealed that individual elementary schools varied in the percentages of totally new students registered in September, not including new kindergarten pupils, from 24.7 to 7.7 per cent. When individual grades were studied within schools, percentages of new students varied from 2.4 per cent to 29.5 per cent, when compared with the enrollments in preceeding grades ten weeks earlier.

Cross-Validation Results for a Study-Habits Inventory

WILLIAM B. MICHAEL, ROBERT A. JONES,
PHYLLIS KENNEDY, AND WALLACE S. HIGH

During recent years a great deal of attention has been given to the investigation of non-intellectual variables in the prediction of scholastic success as evidenced, for example, by the work of Carter(1,2), Gough(3), Holtzman, Brown and Farquhar(4), Michael and Reeder(5), Myers and Shultz(6), and Wrenn(7). It has been thought that differences in motivational patterns or personality characteristics as reflected by responses to items in the non-cognitive domain would possibly be present in the instance of underachievers vs. overachievers or accelerated students vs. retarded students. Two of the primary difficulties in the development of valid measures in the area of study habits—both skills and attitudes in study—have been (1) the attainment of reliable criterion measures in the area of scholastic achievement and (2) the control of the factor of intelligence. Although the latter difficulty can be accounted for to some extent both experimentally and statistically (through use of partial correlation techniques), the former obstacle cannot be so readily handled except in the instance that evaluation procedures permit a relatively objective assessment of the achievement of curricular objectives that are expressed in behavioral terms and sampled by test items similarly stated. Customarily highly reliable criterion measures are not available in the validation of items intended to predict academic success.

For a number of years the senior author has been attempting to develop a study-habits inventory that could be used as an instrument that is

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Since 1952, William Burton Michael has been Director of the Testing Bureau and Associate Professor of Education and Psychology at the University of Southern California. After receiving his doctorate from U.S.C. in 1947, he was Assistant Professor of Psychology at Princeton University for three years. He has also been an associate professor at San Jose State College and a research associate with the RAND Corporation. He has published more than fifty professional papers.

Robert Anthony Jones has been Lecturer and Assistant Director of the Testing Bureau at USC. He has held this position since 1950. Before coming to USC he was an instructor at George Pepperdine College and teacher in the Los Angeles Schools.

Phyllis Kennedy, who completed a Masters Degree in Educational Psychology at USC in 1955, is employed in the Testing Service at Los Angeles State College.

Wallace High, who completed his Masters degree in Psychology at San Jose State College, is currently working toward a PH.D. in the area of psychological measurement at USC. He is employed full-time as a Research Psychologist at Human Factors Research, Inc., in Los Angeles.

relatively independent of scholastic aptitude measures for prediction of scholastic achievement at the college level. Although preliminary results were quite encouraging with freshmen at Princeton University, as reported in the previously cited paper by Michael and Reeder(5), initial cross-validation studies with the key developed for Princeton students yielded validity coefficients of only .18 and .21 for 360 male and 116 female freshmen, respectively, who entered the University of Southern California during the fall of 1952. Although statistically significant, these coefficients pointed to the fact that little practical validity could be added to the battery of aptitude and achievement tests in use at the University for the selection and placement of students.

The purpose of the study undertaken was to develop a scoring key for men and a scoring key for women students at the University of Southern California that would be valid in the prediction of scholastic achievement during the first semester of the freshman year. At the same time a secondary objective was to derive a key yielding scores that would be relatively independent of measures of scholastic aptitude. It was hoped that in the instance of students who were marginal in their scholastic aptitude measures, a means might be found for the identification of potential overachievers as well as underachievers.

Gathering the Data

Two groups of men and two groups of women were employed in the validation of the inventory, and each of the keys derived from one group of subjects of a given sex was tried upon the other group of the same sex. In the instance of men the two samples consisted of 262 students who entered during the fall of 1953 and of 197 students who first enrolled during the spring semesters of 1953 and 1954. Parallel samples of women consisted of 120 and 74 subjects respectively. All students were enrolled for at least twelve semester units of work during the first semester.

Nature of the inventory. The *Study Habits Inventory,* which was a required portion of the entrance examination administered to all prospective freshmen, consisted of 121 yes-no items that were positively expressed in behavioral terms and so worded as to elicit a particular dichotomous response. The directions specifically stated that answers to the questionnaire would in no way affect classroom marks or future job recommendations. That the results would be kept confidential was emphasized.

The content of the items was related to topics concerned with physical conditions of the place of study, reading techniques, methods of attacking assignments and problems, learning and forgetting phenomena, reviewing and cramming practices, methods of completing assignments and preparing for examinations, and emotional responses to various conditions including the ability to concentrate and to persevere.

Processing the Data

In the development of each of the four scoring keys the following statistical operations in brief were attempted: (1) the completion of two item analyses in which the verbal score on the *University of Southern California Scholastic Aptitude Test* and freshman grade point average served as two criteria; (2) the graphical estimation of tetrachoric coefficients of correlation between each Inventory item and each of the two criteria from use of an abac that is adapted to the situation in which the criteria distribution has been divided at the median; (3) the calculation of a partial-correlation coefficient for each Inventory item in which the net correlation between mode of response to the item and grade point average is calculated with verbal aptitude held constant; (4) the selection of items judged to be significant at the .10 level; (5) the assignment of weights of +1 and 0 to the statistically valid "yes" or "no" responses; (6) the **initial validation** of each of the four Inventory keys with respect to the sample from which the key was derived (that is, the calculation of a coefficient of correlation between scores on the Inventory and grade point average of the candidates of the same sample that contributed data to the item analysis statistics); and (7) the **cross validation** of each of the keys for a given sex group upon the other group of the same sex (that is, the use of the two (male and female) fall keys upon the corresponding male and female group of students entering at the beginning of two spring semesters and the employment of the two spring keys upon the appropriate samples of students that enrolled in the fall.)

In addition, for each of the two samples of male and female subjects who first attended the University during the fall of 1953, the following additional statistical procedures were followed: (1) the selection of items that were statistically significant at the .10 level relative to their zero order correlation with grade point average (*i.e.*, the correlation of items with the achievement criterion irrespective of their degree of correlation with verbal aptitude) and (2) the correlations of scores obtained from the key based on zero-order correlation with other scores furnished by the key that was derived from the partial correlation coefficients. An indication was sought as to the extent to which the failure to control verbal aptitude might influence the degree of similarity of the two keys.

Another aspect of item-analysis procedures was also investigated. In the instance of the two samples of male and female students who entered the University at the beginning of the two spring semesters, the following statistical procedures were followed as a variation to the selection of items for the Inventory: (1) the calculation of a regression equation in raw score form to predict the grade point average of students from verbal aptitude scores only; (2) the selection of the upper and lower fourth of each sample relative to the size of departure of an individual's obtained score from the

regression line (that is, the selection of individuals whose obtained grade averages deviated from predicted grade averages to the extent that the individuals with deviation scores above the 75th percentile constituted one extreme group and those with deviation scores below the 25th percentile represented the other group); and (3) the analysis of responses to items relative to their degree of differentiation between individuals who in terms of their membership in the two extreme groups were judged to be overachievers or underachievers. Comparisons were then made to ascertain to what extent items selected in this manner were the same as those chosen from application of a partial correlation technique.

Item-Analysis Results

In terms of the partial correlation techniques followed, the numbers of items that were statistically significant in their degree of correlation were 22 and 27 for the male and female fall keys and 36 and 33 for the corresponding spring keys. For the fall key only seven items were common for the two sex groups, and five of these were keyed in opposite fashion. In the instance of the spring key there were only two items keyed in the same manner for men and women. Three items required opposite answers for men and women.

As to comparisons between spring and fall keys for men and between the two corresponding keys for women it was seen that only five items were common for men and only six items for women. Of those five and six tems it was noted that two and three of them, respectively, required opposite answers. From these findings it is apparent that a great deal of specificity existed for each group. The implication would be that many items which were selected as being valid in a given group were chosen fortuitously probably because of the apparent inflation of the size of the correlation coefficients through the presence of substantial amounts of sampling error.

It was interesting to note that in the instance of two scoring keys, one of which was based upon use of partial correlation and the other upon zero order correlation (the relationship of the item to achievement irrespective of verbal aptitude), the coefficients of correlation between scores in the Inventory were .884 and .956 for the two samples of 262 men and 120 women. It would appear that for these two samples the two derived keys measured essentially the same characteristics. That this degree of correlation would be expected was apparent from the fact that there were 19 and 25 items common to each of the pairs of keys for men and for women, respectively.

For the two extreme groups who were designated as overachievers and underachievers during the two spring semesters a comparison was made between items that discriminated between these two groups and those

items that were significant from use of the partial correlation technique. Perhaps in view of the smallness of the samples, only 12 and 4 items for men and women, respectively, were statistically significant at the .10 level. However, when a significance level approximating .30 was taken, it was seen that relative to the 36 and 33 items significant at the .10 level for men and women in the key derived from partial correlation coefficients the number of corresponding items was 31 and 29. In short, the use of under- and overachieving groups in the selection of Inventory items led to a high degree of communality with those chosen by partial correlation techniques when a less stringent significance standard was employed in conjunction with the extreme group approach.

An analysis of the content of the statistically valid items suggested four logical categories of response: (1) **positive type of achievement motivation** or a non-passive sense of responsibility (six items for men, one item for women) as illustrated by the attempt to relate new material to previous experience or to work out problems in addition to those assigned; (2) **positive or negative emotional set** (four items for men, six items for women) as indicated by freedom from tension, neurotic symptoms, or defense mechanisms; (3) **efficient study techniques** (five items for men, seven items for women) such as judicious scheduling, spacing of time, skill in organization of material, and systematic procedures of study; (4) **avoidance of activity with other individuals** that would hinder study (three items for men, four items for women) such as limiting participation in bull sessions for study, foregoing family help, or refraining from evening telephone conversations. For women an additional category of items appeared to exist that was concerned with the **avoidance of factors** related to physical surroundings as reflected by such items as those concerned with the tendency to avoid noise, to have the location of the desk not too near the radio or television, or to refrain from studying in bed. Six items were unclassified. Actually a factor-analytic study should be carried out to ascertain the dimensionality of the Inventory and to furnish information concerning the possible identification of the factors revealed.

Validation Results for the Inventory

For the sample of 262 men admitted during the fall of 1953 the coefficient of correlation between first semester grade point average and scores on the Inventory that were obtained from the (partial-correlation) key based on data for the group was .282, which was statistically significant beyond the .01 level. The correlation between the same set of scores on the Inventory and the measures of verbal aptitude was −.040. Since the validity coefficient was expected to be considerably magnified in view of the capitalization upon random error in this **initial validation** of items, the application of this same (fall) key to a new group of 197 men who constituted a combined sample of freshmen for the 1953 and 1954 spring semesters

yielded a validity coefficient of only .081, which was not statistically significant.

The spring key that was derived from the 197 male students entering at the beginning of the two spring semesters yielded a correlation of .330 (statistically significant beyond the .01 level) between grade point average and Inventory scores. The correlation between scores on the Inventory and measures given by the verbal aptitude test was –.060. Upon cross-validation this key resulted in a correlation of .148 (statistically significant beyond the .01 level) between the grades of the 262 fall freshmen and Inventory performance. Although the coefficient was statistically reliable, its practical significance in the selection of students would be highly questionable.

Likewise the results were similar for the two keys that were derived from two different samples of women and then cross-validated. In the instance of the 120 freshmen women admitted during the fall of 1953 and the 74 freshmen women registered during the 1953 and 1954 spring semesters the two **initial validity coefficients** were .517 and .460, respectively, which were statistically significant beyond the .01 level. The respective correlation between Inventory scores and the measures of verbal aptitude were .252 and –.025. When each of the two keys was applied to the other sample, the validity coefficients were found to be .234 and .052. (The first coefficient was statistically significant beyond the .01 level, although the second coefficient was not statistically reliable).

In short, every one of the four coefficients obtained from the initial validation showed a marked drop when each of the four derived scoring keys was applied to a new sample: .282 to .148 and .517 to .234 in the instance of the application of the two fall keys to the two groups of men and women in the spring classes; and .330 to .081 and .460 to .052 in the use of the two keys derived from the spring classes upon the two groups of men and women who enrolled as freshmen in the fall of 1953.

An incidental finding was that in the initial validation based on zero order correlations of items with scholastic achievement validities of .307 and .520 were found for men and women in the spring classes compared with respective validities of .330 and .517 when keys based on partial correlation coefficients were employed. When cross-validated upon fall classes the initial validities of .307 and .520 were seen to correspond to values of only .076 and .074.

Conclusions

The results obtained from the cross-validation indicated that the Inventory was not sufficiently valid to be used in the prediction of scholastic achievement of college students at the freshman level. Despite the existence of Kuder-Richardson reliability estimates in the range between .77 and .89 and test-retest estimates of reliability in the vicinity of .88 in the two other samples not described in the current study, the specificity of the criterion

measures and their probable lack of reliability would seem to account to a large extent for the failure to obtain higher validities. Another attenuating factor may have been the existence of only two alternatives in the responses to the items.

Current research in progress. As a consequence of the findings of the study the inventory was shortened to 85 items, each one of which had shown a degree of validity significant at or beyond .30 level in at least two samples. All items have been rewritten to conform to a five-choice situation in which the person can indicate the degree of his participation in the activity described or the extent of his feelings toward the activity on a five point scale. In addition, grades in selected courses are being employed, since the evaluation procedures followed in these particular courses are relatively objective. Moreover, whenever grade point averages are employed, only those students enrolled in one specific college or school of the University are to be included within a particular sample. In light of these extra precautions and in view of changes in the format of the instrument, it is possible that validities of both statistical and practical significance may be forthcoming.

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* *Research for Curriculum Improvement* is the title of the 1957 Yearbook of the Association for Supervision and Curriculum Development. As used by the fourteen authors, "curriculum research," is largely synonymous with "action research." The publication is, therefore, primarily directed to those who are not professional educational researchers. Considerable attention is given to human relations problems involved in originating and implementing research designed to change curricular patterns and practices. It is available from the Association for Supervision and Curriculum Development (NEA), 1201 Sixteenth St., N.W., Washington 6, D. C. for $4.00.

Prediction of Achievement in Schools of Nursing

DOROTHY C. GUNNELL AND RUTH E. NUTTING

The shortage of nurses is such that the government continues to list professional nursing as a critical occupation (6). The most recent data on the number of professional registered nurses actively employed are the October 1956 estimates, jointly prepared by the American Nurses Association, the National League for Nursing, the United States Public Health Service, the American Hospital Association and the Office of Defense Mobilization. This estimate was placed at approximately 430,000, or 259 active professional nurses per 100,000 population; an additional 70,000 are needed if the reasonable goal of 300 per 100,000 population is to be met (7). Although the number of students who enter and graduate from schools of nursing increase each year, this increase is not sufficient to meet the increasing demand for professional nursing service.

One of the problems which schools of nursing continue to face with no apparent abatement is the high attrition rate among student nurses. Approximately 33 per cent of those who enter schools of nursing drop out before graduation (1). The chief reason for withdrawal or dismissal is failure in classwork; the second is matrimony. During the first six months of professional training, a major reason for "dropping out" is "did not like nursing." It is during this period that the greatest number withdraw and it is this period of the student's education that is most costly to the school (13). These withdrawals constitute a loss of approximately 14,000 potential professional nurses a year (1).

If schools of nursing are to increase their holding power and become more effective in the selective retention of promising candidates for the profession continuing research must be directed to all aspects of the recruiting, selection, and retention procedures presently used. The study reported here constitutes an attempt to assess the effectiveness of some

Mrs. Dorothy Carroll Gunnell is Instructor in Nursing Arts, Basic Curriculum in Nursing, at the University of California School of Nursing in San Francisco. She has been in this position for five years. Her previous professional experience includes service in the Army Nurse Corps from 1941 to 1945 and as Head Nurse at Herrick Memorial Hospital in Berkeley, California. She holds the master of science degree from the University of California at Berkeley.

Ruth E. Nutting is an Instructor in Nursing at the University of California School of Nursing in San Francisco. She has served in the Army Nurse Corps and as Head Nurse at Stanford University Hospital. She holds the master of science degree from the University of California at Berkeley.

of the screening and prediction measures frequently used in nursing education. The measures involved in the present study happen to be those in use in the University of California School of Nursing and therefore, uncritical generalization to other institutions is not invited. However, inasmuch as some of the measures are used in identical form elsewhere, and against the same criterion, it is felt that the study will be of general professional interest, despite its localized origin and setting.

Delimitation of the Study

The research was designed to provide answers to the following specific questions:

(1) How do students entering the School of Nursing from the University of California compare with those entering from junior colleges with respect to achievement in the professional program?

(2) How effective is entering grade-point-average (GPA) as a predictor of final GPA in the professional program?

(3) How effective is an initial measure of intelligence as a predictor of final GPA in the professional program?

(4) How effectively does each of the following measures predict performance on the California State Board Examination: entrance GPA, clinical GPA, classroom GPA, total nursing GPA, and Otis IQ?

(5) How effectively can an initial measure of interest in nursing predict clinical GPA?

(6) How effectively can an initial measure of personality predict clinical GPA?

Subjects and Setting

A group of 101 students who recently completed the basic curriculum in nursing was selected for this study. Five students are not included in this study as they took the state board examinations in states other than California. A review of the records of 130 students who entered the University of California School of Nursing in September 1951 and September 1952 show that 106 completed the program. The attrition rate of this group was 18.5 per cent, a rate substantially lower than the national average. All those completing the program passed the state board examinations at first attempt and were licensed to practice as professional nurses.

A requirement for admission to the Basic Program of the University of California School of Nursing, at San Francisco, is the fulfillment of the requirements for the Associate of Arts degree in the College of Letters and Science. The work may be taken in any accredited university or college but must include the equivalent of some seven specific courses offered on the Berkeley campus. After the students are registered in the School of

Nursing, a group of psychological tests are administered: the *Otis Self-Administering Test of Mental Ability,* Higher Examination: Form A *(Otis S-A);* the *Strong Vocational Interest Blank for Women* (Revised); and the *California Test of Personality.* These tests are used in counseling and are made available for institutional research purposes. Upon completion of the professional program, which requires 28 months of classwork and clinical experience in nursing, the student receives a Bachelor of Science degree and a Certificate of Completion (5).

The data used in this study were gathered from the records of the subjects and include the following:

(1) The type of collegiate program in which the student completed her pre-nursing work.

(2) Grade-point-average of the college work completed prior to entrance to the School of Nursing (entrance GPA).

(3) Grade-point-average of all work completed in the School of Nursing (total GPA).

(4) Grade-point-average of classwork completed in the School of Nursing (classwork GPA).

(5) Grade-point-average of clinical practice grades in the School of Nursing (clinical GPA).

(6) Intelligence quotients provided by the Otis Self Administering Test.

(7) Ratings on "Nurse" scale of the Strong Vocational Interest Blank (SVIB).

(8) Percentile rank of "total adjustment score" on the California Test of Personality.

(9) Standard scores on the California State Board Examination for Professional Nurses.

Findings

Comparison of Students from Junior Colleges and the State University. Total nursing program GPA's and entrance GPA of students who entered the nursing program having completed their first two college years at the University of California at Berkeley were compared with similar GPA's of those who completed their first two college years at a junior college in California. Of the total number of subjects, 33 had attended the University of California at Berkeley, and 37 had attended junior colleges. These 70 subjects were utilized for this comparison. The mean GPA's and standard deviations were computed for each group and are reported in Table I (page 187).

The differences between mean GPA's were tested for significance against the null hypothesis, by use of the t-test. The ratio was not large

enough to warrant a conclusion that non-chance differences exist between the two groups of students with reference to total nursing GPA ($P>.10$). However, the two groups do differ significantly in mean GPA earned during the first two college years ($P<.01$). This difference probably reflects differences in grading practices rather than differences in ability, however, since nursing GPA's were not significantly different.

TABLE I

Comparison of General Education GPA and Nursing GPA Earned by Students Entering U.C. School of Nursing Basic Program from U.C. Berkeley and Junior Colleges in California

Source	*N*	*General Education* *Mean GPA*	*SD*	*Nursing Program* *Mean GPA*	*SD*
U. C. Berkeley	33	1.39	.32	1.87	.41
Jr. Colleges	37	1.82	.41	1.70	.40

Entrance GPA and Otis IQ as Predictors of Achievement in the Professional Program. Correlations were computed to determine the extent to which entrance grades and Otis IQ relate to achievement in the nursing program. Measurement of success in the professional work was separated into three categories: clinical GPA, classwork GPA, and total GPA (the clinical and classwork combined). Classwork includes study in upper division and professional courses using lecture, demonstration, and discussion techniques. Clinical work includes supervised experience in caring for patients, conferences concerning patient care, and nursing care studies. The Otis S-A, which was used to determine mental ability in this study, has been found to correlate highly with other measures of intelligence, and is used extensively in examination of high schools and colleges (9). The scores appear to have considerable value in predicting academic achievement (14), although the relationship of IQ to competence in clinical situations has not yet been clarified. Pearson product-moment coefficients of correlation were derived between the two predictors and each of the three GPA criteria. The resulting coefficients are reported in Table II.

TABLE II

Correlations Among Entrance GPA, Otis IQ, Clinical GPA, Classwork GPA, Total GPA (N-101)

	Clinical GPA	*Classwork GPA*	*Total GPA*
Entrance GPA	.37	.43	.51
Otis IQ	.30	.46	.42

All of these correlations are significant at or below the .01 level. It appears that both entrance grades and IQ as determined by the Otis S-A

afford a substantial basis for predicting total grade-point-averages during the twenty-eight months in the school of nursing. The coefficients .51 and .42 compare favorably with those obtained elsewhere. In other studies correlating high school achievement and nursing achievement, the range of r is from .32 to .55 with the median r of .43 (12). The correlations between entrance GPA or Otis IQ and clinical GPA are lower than those with classwork GPA and total GPA. This finding appears to be consistent with an hypothesis that clinical work draws to a lesser degree on the verbal-symbolic skills called for in intelligence tests and in the general college program—a hypothesis that deserves some consideration but will not be considered in this study.

Prediction of Performance on State Board Examinations. Another measure of achievement in nursing is performance on the State Board Examination for Professional Nurses. This objective paper-and-pencil examination is administered after graduation from an accredited school of nursing and purports to measure knowledge in nursing. Upon successfully completing it, a nurse may be licensed to practice as a registered professional nurse in the state in which it was administered. To determine the extent to which performance on the California State Board Examination for Professional Nurses can be predicted from entrance GPA, clinical GPA, classwork GPA, and Otis IQ, Pearson product-moment coefficients of correlation were computed among the measures. The correlations are shown in Table III.

TABLE III

Correlation Between Scores on State Board Examination and the Following Measures: Entrance GPA, Clinical GPA, Classwork GPA, and Otis IQ.

Predictors	*r*
Entrance GPA	.26
Clinical GPA	.40
Classwork GPA	.60
Total GPA in Nursing	.59
Otis IQ	.50

All these correlations are significant at or below the .01 level, and all of them are rather high except for that produced by entrance GPA. It seems clear that the Otis IQ and performance in all aspects of the professional program are related to the kind of skills demanded by the California State Board Examination for Professional Nurses. The correlation between clinical grade-point-average and the State Board Examination score is lower than that found between classwork grade-point-average and the State Board Examination score; this, again, is consistent with an hypothesis that clinical work is somewhat less dependent on the verbal-symbolic skills called for in intelligence tests.

Relationship Between Interest in Nursing and Clinical GPA. It would appear, on *a priori* grounds, that the kind of performance demanded in clinical practice should be related to interest in nursing. Accordingly, ratings on the "Nurse" scale of the Strong Vocational Interest Blank for Women were compared with clinical GPA. Strong's "Nurse" scale is one of 27 scales in the Blank and ratings of "A" or "B" on the scale purport that the subject has interests similar to those successfully engaged in the profession (11).

The scores on the "Nurse" scale of the Strong Vocational Interest Blank were dichotomized into A and B versus B— and C. The distribution of GPA's in clinical courses was trichotomized. The associated frequencies were organized into the contingency table shown in Table IV and their association was tested by the chi-square technique.

TABLE IV

Relationship Between Clinical GPA and Score on Nurse Scale of Strong Vocational Interest Blank for Women

Clinical GPA Totals (f)	*Performance on Nurse Scale SVIB*		Totals
	A, B (f)	*B-, C (f)*	
2.00 and up	26	16	42
1.50 to 1.99	21	15	36
1.49 and under	12	9	21
Totals	59	40	99

The results of this analysis indicate no association between Nursing interests and performance in clinical courses. The analysis yielded a chi-square of .19, which has a P value of more than .90. Similar results were obtained by Navran and we conclude that scores on the "Nurse" scale are not usefully related to ability to finish nursing school, as has been previously believed (8). Further evidence is available in the records of the seven subjects who resigned because they "did not like nursing." It is noted that five of these scored A,B, and two scored B-,C on the "Nurse" scale.

Relationship of Personality to Clinical GPA. The relationship between clinical achievement and a measure of personality was sought because of current emphasis on the interpersonal and intrapersonal aspects of the

nurse-patient relationship. However, previous studies indicate that, although the student nurse is a more stable individual than other college women of her age group, personality tests demonstrate almost negligible power of prediction of success in a school of nursing (3, 2, 4, 10). It may be, of course, that there is little variance in the personality measure among student nurses, which would preclude an identifiable correlation. In the present study, we have re-examined this relationship, using the personality test which is regularly administered to entering students for counselling purposes.

The distribution of percentile ranks on the California Test of Personality was trichotomized into P49 or lower, P50-P74, and P75 or higher. Clinical GPA's were also trichotomized. The two measures were examined for their degree of association by means of a chi-square analysis. Table V presents the contingency table.

TABLE V

Relationship Between Clinical GPA and Percentile Rank of Total Adjustment Score on California Test of Personality.

	CTP Percentile Rank			
Clinical GPA	*P49 or Lower (f)*	*P50-P74 (f)*	*P75 or Higher (f)*	*Totals (f)*
2.00 and up	12	11	21	44
1.50 to 1.99	14	11	9	34
1.49 and under	4	7	9	20
Totals	30	29	39	98

The chi-square is 4.21, with $P > .30$. There appears to be no association between these measures, a result in accord with previous research. We are led to conclude that the initial screening procedures eliminate those persons whose personality patterns preclude adequate functioning in clinical work. It appears unreasonable to accept the alternative conclusion: that personality is not a factor in clinical situations.

Summary

If final grade-point-average is used as a criterion of achievement in nursing education programs, it appears that usable predictors of this criterion can be made from entering grade-point-average and Otis IQ. If final grade-point-average is separated into its clinical and classwork com-

ponents, the same conclusion appears justified, except that the prediction of clinical achievement from Otis IQ is seen to be markedly lower than the prediction of classwork achievement or total achievement from the measure.

When performance on the State Board Examination is used as the criterion, very good predictions can be made from each of the following measures: entering GPA, clinical GPA, classwork GPA, total GPA, and Otis IQ.

For both the achievement and State Board criteria, it can be assumed that the prediction will be considerably improved if all measures are used, in combination, as predictors. This increase in prediction by using multiple variables can be studied with our data, but we have not yet undertaken the analysis.

Scores on the "Nurse" Scale of the SVIB and on the California Test of Personality do not afford predictive basis for clinical achievement. Our conclusion is that performance on these measures is already highly constricted by the self-screening and institutional screening that takes place before admission.

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Book Reviews

PHYSICAL EDUCATION, Student and Beginning Teaching

CLYDE KNAPP and ANN E. JEWETT

New York: McGraw-Hill Book Company, Inc., 1956. 303 pages. $4.75

This book deals with physical education as an educational activity. It is only incidentally concerned with athletics in the usually accepted sense of competitive sports. The discussion is confined to teaching in junior and senior high schools, but much of the material would seem applicable to the upper elementary grades and to junior college physical education activities.

Because the emphasis is on the general development of students and on the teaching of skills of general use to adolescents, the text seems to cover both boys' and girls' physical education programs adequately. The physical education instructor is viewed as a teacher first and as a specialist second. The book devotes several chapters to general teaching methods and to the responsibilities of teachers for guidance, for knowing the community, and for participation in general school and professional activities.

After a brief description of physical education and its place in the school program, the major part of the book is devoted to the experiences of student teaching. However, the authors do not stop there. They end with four practical chapters on how to be a successful beginning teacher. Throughout the book there is a very commendable stress on the professional responsibilities of teachers.

The chief limitation of the book is in its use of ideals. The authors undoubtedly recognize that they are setting very high standards for their readers. However good the activities and methods they advocate may be, they undoubtedly know that they cannot be followed perfectly in many situations. As stated above, the authors seem very practical in their advice to beginning teachers. Nevertheless, there is danger that the student teacher will develop an exaggerated notion of the status of physical education if he reads this text uncritically. It is difficult to say what the authors could have done to remedy this shortcoming. After all, physical education should be like their description. Would a catalogue of its deficiencies in real life help produce better teachers?

This is a very good book for teacher training programs. It is to be hoped that colleges and universities engaged in teacher education will make good use of it.

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